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"GPS Assistance Messages in Cellular
Communications Networks And Methods Therefor"
Atty. Docket No. CS90038

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REMARKS

Request for Reconsideration, Informal Matters, Claims Pending

The Official action mailed on 1 March 2004 has been considered carefully. Reconsideration of the claimed invention in view of the amendments above and the discussion below is respectfully requested.

While the term Global Positioning System (GPS) has been used in a generic sense throughout the specification to include NAVSTAR among other satellite positioning systems, the claims have been amended to recite a satellite positioning system (SPS) to avoid exclusive association of GPS with NAVSTAR.

Claims 1-10, 16-18 and 25-28 are pending.

Election Responsive to Restriction Requirement

The Claims 11-15 and 19-24 have been canceled in response to a restriction requirement, without traverse. There was not an original Claim 19 due to improper numbering of the original claims.

Allowability of Claims Over Kingdon, Bloebaum & Moeglein

Rejection Summary

Claims 1-4 and 6-8 stand rejected under 35 USC 103(a) as being anticipated by Publication No. US 2001/0014604 A1 (Kingdon) in view of

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Publication No. US 2002/0082774 A1 (Bloebaum). Office Action, 1 March 2003, para. 6.

Claim 5 stands rejected under 35 USC 103(a) as being anticipated by Publication No. US 2001/0014604 A1 (Kingdon) in view of Publication No. US 2002/0082774 A1 (Bloebaum) and U.S. Patent No. 6,215,441 (Moeglein). Office Action, 1 March 2003, para. 7.

Allowability of Claim 1

Regarding independent Claim 1, Kingdon and Bloebaum fail to disclose or suggest a

... method for updating a satellite positioning system ephemeris data issue identifier transmitted to a satellite positioning system enabled mobile station in a cellular communications network, comprising:

receiving satellite positioning system ephemeris data at a reference node in communication with a cellular communications network;

generating an assistance message including satellite positioning system ephemeris data and other parameters;

generating a satellite positioning system ephemeris data issue identifier;

receiving updated satellite positioning system ephemeris data and other updated parameters;

updating the satellite positioning system ephemeris data issue identifier only when the satellite positioning system ephemeris data has been updated.

¶ Contrary to the Examiner's assertion, Kingdon and Bloebaum do not disclose "... generating a satellite positioning system ephemeris data issue identifier..." as recited in Claim 1. The ephemeris data issue identifier is used

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to indicate when a mobile station needs to read and store corresponding ephemeris data. The Examiner appears to confuse the ephemeris data issue identifier with the ephemeris assistance message, which includes ephemeris and/or clock correction data.

The Examiner's reliance on Paragraphs [0024 & 0025] of Kingdon, are misplaced. Paragraph [0024] discloses transmitting differential corrections on a broadcast channel every 5 seconds to avoid the delay associated with transmission of the information to the MS from the MLC. Paragraph [0025] discloses updating the communication network MLC with assistance GPS data (from a GPS reference receiver) and forwarding the assistance GPS data (in an SMS message) to the MS in response to a location request.

The Examiner reliance of paragraph [0032] of Bloebaum is also misplaced. Paragraph [0032] of Bloebaum merely discloses the use of aged assistance data for preliminary location computations while waiting for up-to-date assistance data.

Claim 1 and the claims that depend therefrom are thus patentably distinguished over Kingdon and Bloebaum.

Discussion of Claim 2

Regarding Claim 2, Kingdon and Bloebaum fail to disclose or suggest, in combination with Claim 1,

... not updating the satellite positioning system ephemeris data issue identifier when parameters other than the satellite positioning system ephemeris data change.

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As noted, Kingdon and Bloebaum fail to disclose or suggest generating a satellite positioning system ephemeris data issue identifier. Therefore there is no reason for Kingdon and Bloebaum to update the ephemeris data issue identifier. Claim 2 is thus further patentably distinguished over Kingdon and Bloebaum.

Discussion of Claim 3

Regarding Claim 3, Kingdon and Bloebaum fail to disclose or suggest, in combination with Claim 1,

... transmitting a satellite positioning system ephemeris data issue identifier over the cellular communications network, receiving the satellite positioning system ephemeris data issue identifier at a mobile station, comparing the received satellite positioning system ephemeris data issue identifier with a corresponding satellite positioning system ephemeris data issue identifier stored at the mobile station, reading a corresponding ephemeris assistance message at the mobile station only if the received satellite positioning system ephemeris data issue identifier is different than the stored satellite positioning system ephemeris data issue identifier.

The Examiner concedes that Kingdon does not disclose "... comparing ..." a received data issue identifier with a stored data issue identifier. The Examiner's reference to paragraph [0032] of Bloebaum is misplaced. Paragraph [0032] of Bloebaum discloses the computing preliminary location information using aged assistance information while waiting for updated assistance information. In Bloebaum, there is no

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comparison of data issue identifiers. Claim 3 is thus further patenably distinguished over the art.

Discussion of Claim 4

Regarding Claim 4, Kingdon and Bloebaum fail to disclose or suggest, in combination with Claim 1,

- ... receiving satellite positioning system ephemeris data from a plurality of satellites at a reference node in communication with a cellular communications network;

- generating a plurality of assistance messages including satellite positioning system ephemeris data from the plurality of satellites and other parameters;

- generating a satellite positioning system ephemeris data issue identifier for each of the plurality of assistance messages;

- updating the plurality of satellite positioning system ephemeris data issue identifiers only when the satellite positioning system ephemeris data of the corresponding assistance message has been updated.

As noted, Kingdon and Bloebaum fail to disclose or suggest generating a satellite positioning system ephemeris data issue identifier. Therefore is no reason for Kingdon and Bloebaum to update the ephemeris data issue identifier. Claim 4 is thus further patentably distinguished over Kingdon and Bloebaum.

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Discussion of Claim 5

Regarding Claim 5, Kingdon, Bloebaum & Moeglien fail to disclose or suggest, in combination with Claim 4,

... encoding each of the satellite positioning system ephemeris data issue identifiers and a corresponding satellite identifier in a corresponding sequence of binary digits, transmitting the sequence of binary digits over the network.

The Examiner reliance on Moeglein to meet the admitted deficiencies of Kingdon and Bloebaum is misplaced. In col. 8, lines 4-36, Moeglein discusses providing assistance messages from a GPS reference station. As noted above, however, there is a difference between an ephemeris assistance message and an ephemeris data issue identifier. Claim 5 is thus further patentably distinguished over the prior art.

Discussion of Claim 6

Regarding independent Claim 6, Kingdon and Bloebaum fail to disclose or suggest a

... method for updating a satellite positioning system almanac data issue identifier transmitted to a satellite positioning system enabled mobile station in a cellular communications network, comprising:

receiving satellite positioning system almanac data at a reference node in communication with a cellular communications network;

generating an assistance message including satellite positioning system almanac data and other parameters;

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generating a satellite positioning system almanac data issue identifier;
receiving updated satellite positioning system almanac data and other updated parameters;
updating the satellite positioning system almanac data issue identifier only when the satellite positioning system almanac data has been updated.

Contrary to the Examiner's assertion, Kingdon and Bloebaum do not disclose "... generating a satellite positioning system almanac data issue identifier..." as recited in Claim 6. The almanac data issue identifier is used to indicate when a mobile station needs to read and store a corresponding almanac data. The Examiner appears to confuse the almanac data issue identifier with the almanac assistance message, which includes almanac data.

The Examiner's reliance on Paragraphs [0024 & 0025] of Kingdon, are misplaced. Paragraph [0024] discloses transmitting differential corrections on a broadcast channel every 5 seconds to avoid the delay associated with transmission of the information to the MS from the MLC. Paragraph [0025] discloses updating the communication network MLC with assistance GPS data (from a GPS reference receiver) and forwarding the assistance GPS data (in an SMS message) to the MS in response to a location request.

The Examiner reliance of paragraph [0032] of Bloebaum is also misplaced. Paragraph [0032] of Bloebaum merely discloses the use of aged assistance data for preliminary location computations while waiting for up-to-date assistance data.

Claim 6 and the claims that depend therefrom are thus patentably distinguished over Kingdon and Bloebaum.

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Discussion of Claim 7

Regarding Claim 7, Kingdon and Bloebaum fail to disclose or suggest, in combination with Claim 6,

... not updating the satellite positioning system almanac data issue identifier when parameters other than the satellite positioning system almanac data change.

As noted, Kingdon and Bloebaum fail to disclose or suggest generating a satellite positioning system almanac data issue identifier. Therefore there is no reason for Kingdon and Bloebaum to update the almanac data issue identifier. Claim 7 is thus further patentably distinguished over Kingdon and Bloebaum.

Discussion of Claim 8

Regarding Claim 8, Kingdon and Bloebaum fail to disclose or suggest, in combination with Claim 6,

... transmitting a satellite positioning system almanac data issue identifier over the cellular communications network, receiving the satellite positioning system almanac data issue identifier at a mobile station, comparing the received satellite positioning system almanac data issue identifier with a satellite positioning system almanac data issue identifier stored at the mobile station, reading an almanac assistance message at the mobile station only if the received satellite positioning system almanac data issue identifier is different than the stored satellite positioning system almanac data issue identifier.

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The Examiner concedes that Kingdon does not disclose "... comparing ..." a received data issue identifier with a stored data issue identifier. The Examiner's reference to paragraph [0032] of Bloebaum is misplaced. Paragraph [0032] of Bloebaum discloses the computing preliminary location information using aged assistance information while waiting for updated assistance information. In Bloebaum, there is no comparison of data issue identifiers. Claim 8 is thus further patenably distinguished over the art.

Allowability of Claims Over Kingdon & Chen

Rejection Summary

Claims 16-18 stand rejected under 35 USC 103(a) as being anticipated by Publication No. US 2001/0014604 A1 (Kingdon) in view of U.S. Paten No. 6,611,756 (Chen). Official Action, 1 March 2003, para. 8.

Discussion of Claim 16

Regarding independent Claim 16, Kingdon and Chen fail to disclose or suggest a

satellite positioning system ephemeris data issue identifier for transmission to a satellite positioning system enabled mobile station in a cellular communications network, comprising:
a first field with satellite identifier data; and
a second field with an ephemeris sequence number.

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Neither Kingdon nor Chen disclose an ephemeris data issue identifier. The Examiner concedes that Kingdon fails to disclose "... a first field with satellite identifier data; and a second field with an ephemeris sequence number...." The Examiner's reliance on Chen to meet the deficiencies of Kingdon is misplaced. In FIG. 1a, referenced by the Examiner, Chen illustrates the complete NAVSTAR GPS navigation data set transmitted by the NAVSTAR GPS satellites. The navigation data disclosed by Chen is not a "...system ephemeris data issue identifier for transmission to a satellite positioning system enabled mobile station in a cellular communications network..." as recited in Claim 16.

As noted, the concept of using an "ephemeris data issue identifier" to indicate when a mobile station needs to read and store a corresponding ephemeris data (e.g., by obtaining an ephemeris assistance message) is not disclosed or suggest by Kingdom of Chen. Therefore there is no reason why one of ordinary skill in the art would combine information from the GPS navigation message with the message of Kingdom. Moreover, as noted above, the message disclosed by Kingdon is a GPS assistance message, which includes ephemeris data. However, the assistance message of Kingdon is not the same as the claimed "ephemeris data issue identifier", which is used to determine whether the MS must obtain an assistance message. Claim 16 and the claim that depend therefore are thus patentably distinguished over Kingdon and Chen.

Discussion of Claim 17

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Regarding Claim 17, Kingdon and Chen fail to disclose or suggest the ephemeris data issue identifier of Claim 16 wherein "... the first field is at least 5 bits, the second field is at least 3 bits." Claim 17 is thus further distinguished over Kingdon and Chen.

Discussion of Claim 18

Regarding Claim 18, Kingdon and Chen fail to disclose or suggest the ephemeris data issue identifier of Claim 16 is a "broadcast message". Claim 18 is thus further distinguished over Kingdon and Chen.

Allowability of New Claims Over Art

Discussion of Claim 25

Regarding independent Claim 25, the prior art fails to disclose or suggest a

... method for updating a satellite positioning system navigation data value tag transmitted to a satellite positioning system enabled mobile station in a communications network, comprising:

receiving satellite positioning system navigation data at a reference node in communication with the communications network;

generating an assistance message including satellite positioning system navigation data;

generating a satellite positioning system navigation data value tag;

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receiving updated satellite positioning system navigation data;
updating the satellite positioning system navigation data value tag only when the satellite positioning system navigation data has been updated,
the satellite positioning system navigation data including at least one of ephemeris and almanac data.

As noted, Kingdon discloses transmitting differential corrections on a broadcast channel every 5 seconds to avoid the delay associated with transmission of the information to the MS from the MLC, and updating the communication network MLC with assistance GPS data (from a GPS reference receiver) and forwarding the assistance GPS data (in an SMS message) to the MS in response to a location request. Bloebaum discloses the use of aged assistance data for preliminary location computations while waiting for up-to-date assistance data. Moeglein discusses providing assistance messages from a GPS reference station. Chen merely illustrates the complete NAVSTAR GPS navigation data set transmitted by the NAVSTAR GPS satellites. Claim 25 and the claims that depend therefrom are thus patentably distinguished over the art.

Discussion of Claim 26

Regarding Claim 26, the prior art fails to disclose or suggest in combination with the limitations of Claim 25,

... encoding each of the satellite positioning system navigation data value tags in a corresponding sequence of binary digits as a 4-bit + 4-bit value tag, transmitting the sequence of binary digits over the network.

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The prior art does not disclose value tags let alone value tags having the bit structure limitations of Claim 26. Claim 26 is thus further patentably distinguished over the art.

Discussion of Claim 27

Regarding independent Claim 27, the prior art fails to disclose or suggest a

... satellite positioning system navigation data issue identifier value tag for transmission to a satellite positioning system enabled mobile station in a communications network, the satellite positioning system navigation data issue identifier value tag comprising:

- a first field with 4 bits; and
- a second field with 4 bits,

the satellite positioning system navigation data including at least one of ephemeris and almanac data.

As noted, Kingdon discloses transmitting differential corrections on a broadcast channel every 5 seconds to avoid the delay associated with transmission of the information to the MS from the MLC, and updating the communication network MLC with assistance GPS data (from a GPS reference receiver) and forwarding the assistance GPS data (in an SMS message) to the MS in response to a location request. Bloebaum discloses the use of aged assistance data for preliminary location computations while waiting for up-to-date assistance data. Moeglein discusses providing assistance messages from a GPS reference station. Chen merely illustrates the complete NAVSTAR GPS navigation data set transmitted by the NAVSTAR GPS satellites. Claim 27 and

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the claims that depend therefrom are thus patentably distinguished over the art.

Discussion of Claim 28

Regarding Claim 28, the prior art fails to disclose or suggest in combination with the limitations of Claim 27 wherein the almanac data issue identifier of Claim 26 "... is part of a broadcast message." Claim 28 is thus further patentably distinguished over the art.

Prayer For Relief

In view of the amendments and the discussion above, the Claims of the present application are in condition for allowance. Kindly withdraw any rejections and objections and allow this application to issue as a United States Patent without further delay.

Respectfully submitted,



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